

BOMBACACEAE NEOTROPICAE NOVAE II.
NEW SPECIES OF ERIOTHECA, HAMPEA AND QUARARIBEA

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ABSTRACT

Seven species from the neotropics are described as new to the *Bombacaceae*: *Eriotheca peruviana* (Peru), *Hampea dukei* (Panama), *H. micrantha* (Panama), *Quararibea bilobata* (Peru), *Q. longitubulosa* (Peru), *Q. sanblasensis* (Panama), and *Q. wurdackii* (Peru). In addition, a key to the Panamanian species of the genus *Hampea* is given.

Eriotheca peruviana A. Robyns, sp. nov. [subg. *Millea* (Standley) A. Robyns]; a *E. discolori* (H.B.K.) A. Robyns (Bull. Jard. Bot. État Brux **33**: 159, 1963) et *E. ruizii* (K. Schum.) A. Robyns (loc. cit. 162) floribus longioribus et 3.2-4 cm longis, staminibus numerosioribus et 75-80 primo visu sat distincta; etiam *E. vargasii* (Cuatr.) A. Robyns (loc. cit. 165) affinis, sed floribus leviter longioribus pedicello dense minuteque stellato-puberulo, receptaculo calyceque extus minute stellato-tomentello, staminibus tantum 75-80 valde differt.—Fig. 1.

Arbor (?), decidua, ramulis teretibus minute puberulis sed glabrescentibus. *Folia* alterna, digitata, 5-foliolata; petiolus teres, basi leviter dilatato-complanatus apiceque leviter dilatato-subglobosus, usque ad 13 cm longus, sparsissime pilosus pilisque simplicibus, foliola articulata, sessilia; lamina elliptica ad subobovata, basi cuneiformis, apice acuta ad breviter acuminata inconspicueque mucronata, usque ad 10.7 cm longa et 4.5 cm lata, membranaceo-chartacea, marginibus serrulatis, leviter discolor, supra glabra laevisque (ad scabridula et stellato-puberula?), subtus pallidiora et dense scabridulo-stellato-arachnoidea, nervo mediano infra prominenti, nervis lateralibus infra vix prominulis. *Inflorescentiae* praecoces, cymoso-paniculiformes, laxiflorae, axibus pedicellisque dense minuteque stellato-puberulis. *Flores* usque ad 4 cm longi; pedicellus usque ad 8 mm longus, 3-bracteolatus bracteolisque caducis; receptaculum 1.5-2 mm longum, minute stellato-tomentellum, pauciglandulosum; calyx cupuliformis, apice truncatus vel vix sublobatus, 3.5-5 mm longus et apice ca 5 mm diam, extus minute stellato-tomentellus, intus basi longe sericeo-villosus apiceque breviter adpresseque sericeus, persistens; petala oblongo-linearum, basi tubi staminei adnata, 3.2-4 cm longa et 4-5 mm lata, utrinque praeter basin glabram velutina; stamina 75-80, glabra; tubus stamineus cylindricus, 6.5-7 mm longus, in medio 2-2.3 mm diam, basi leviter dilatatus, apice disciformi-dilatatus discoque 3.5 mm diam 5-undulato et sulcato; filamenta in disci sulco inserta, erecta, filiformia, inaequalia, 1.5-2.3 cm longa, apice dilatata; antherae oblongae, horizontales, extrorsae, ca 0.8-1.5 mm longae, uniloculares, longitudinaliter dehiscentes; ovarium sessile, plus minusve piriforme, ca 2.5 mm longum et basi 2 mm latum, tomentellum, 5-loculare, ovulis ∞ in columella centrali affixis, stylo filiformi usque ad 2.5 cm longo praeter basin stellato-puberulam glabro, stigmate truncato (vel inconspicue 5-undulato?). *Capsula* ut videtur

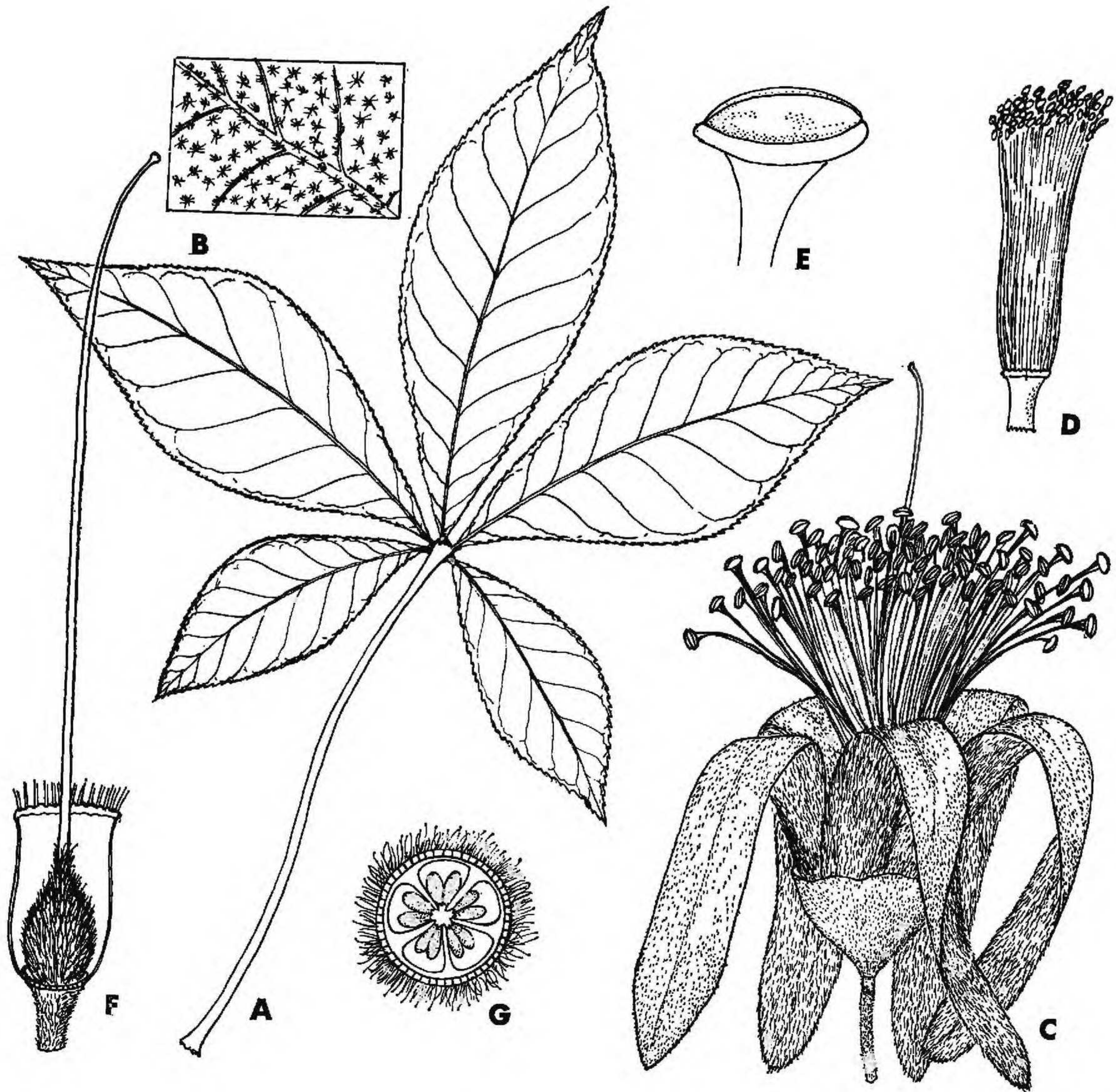


Fig. 1. *Eriotheca peruviana* A. Robyns: A, leaf ($\times 1/2$); B, indumentum of lower leaf-surface (much enlarged); C, flower ($\times 2$); D, androecium ($\times 1 1/2$); E, anther ($\times 15$); F, gynoecium ($\times 3$); G, ovary, cross-section ($\times 13$). After Hutchinson et al. 6228.

obovoidea, apice breviter apiculata, valvis ochraceis induratis extus stellato-puberulis pilisque hyalinis; semina late ovoidea, ca 4 mm longa et 3.5 mm lata, testa fusca minuteque punctata; lana copiosa ferrugineaque.

PERU. LA LIBERTAD: Prov Pataz, Canyon of the Río Marañón, E side of river on rd to Buldibuyo, 5 km above Chagual, alt 1300 m, 9 Aug 1964, Hutchinson, Wright & Straw 6228 (holotype UC, isotype US).

As the type collection is leafless, the description of the leaves was made from cultivated plants originating from the seeds of the type collection (Honolulu Botanical Garden, cultivation number 65.1166, pressed by Hutchinson in July 1967 and deposited at UC under the type collection number).

Hampea dukei A. Robyns, sp. nov.; *H. punctulatae* Cuatr. (Phytologia 4: 472, 1954) affinis, sed floribus hermaphroditis multo minoribus et usque ad 14 mm longis valde distincta.

Arbor trunco 15 cm diam, ramulis novellis dense et minute granuloso-tomentellis pilisque ochraceis et stellatis sed glabrescentibus. *Folia* alterna, simplicia, longe petiolata petioloque tereti usque ad 14 cm longo stellato-tomentello ad stellato-puberulo; lamina latissime ovata, basi aperte cordata ad late rotundata, apice breviter acuminata, usque ad 15 cm longa et lata, tenuiter chartacea, marginibus integris, discolor, atro-punctulata, supra praecipue secus nervos minute stellato-puberula glabrescensque, infra pallidiora et stellato-tomentella, e basi distincte 5-7-nervia, nervis principalibus supra prominulis infraque valde prominentibus. *Flores* axillares, paucifasciculati fasciculisque usque ad 4-floris, hermaphroditi, pedicellis longitudinaliter striatis usque ad 15 mm longis dense et minute granuloso-tomentellis pilisque ochraceis et stellatis; bracteolae non visae; calyx campanulato-cupuliformis, usque ad 6 mm longus, apice 5-lobatus lobisque transverse anguste triangularibus et vix 1 mm longis, extus minute denseque ochraceo-stellato-tomentellus, intus glaber et atro-punctatus; petala 5, usque ad 14 mm longa, tubo ventricoso ca 6 mm longo glabroque, lobis albis contortis inaequilateralibus obovatis leviter cucullatis extus dense minuteque stellato-tomentellis intusque glabris et atro-punctatis; tubus stamineus usque ad 3 mm longus, dense barbatus, filamentis usque ad 2.5 mm longis glabrisque, antheris hippocrepiformibus; ovarium late oblongum, usque ad 3 mm longum, breviter villosum, 3-loculare loculisque pauciovulatis, stylo filiformi apicem versus sensim dilatato usque ad 12 mm longo apice declinato parte inferiore glabro parteque superiore papillato. *Fructus* nondum visus.

PANAMA. SAN BLAS: Río Chucunaque, 2-10 mi above the Cuna-Darien boundary, 21 Aug 1966, *Duke* 8554 (holotype MO).

Hampea micrantha A. Robyns sp. nov.; ab omnibus speciebus generis *Hampeae* Schlecht. floribus masculinis brevissime pedicellatis parvibusque facile distincta.

Frutex vel arbuscula 2-4 m altus, ramulis conspicue fusco-punctatis, novellis stellato-puberulis sed glabrescentibus. *Folia* alterna, simplicia, longe petiolata petioloque tereti 3.5-12.5 cm longo conspicue fusco-punctato stellato-puberulo glabrescentique, stipulis subulatis usque ad 7 mm longis stellato-puberulis caducisque; lamina aequilateralis ad interdum inaequilateralis, ovata, basi rotundata ad late obtusa, apice acuminata acumineque obtuso, 10-25 cm longa et 4.5-12 cm lata, tenuiter ad rigide chartacea, conspicue fusco- ad atro-punctata, marginibus integris ad leviter sinuatis, supra glabra, infra praecipue secus nervos stellato-puberula glabrescensque, e basi distincte 3(-5)-nervia, costa supra elevata et infra valde elevata basique glandulo elongato ornata, nervis secundariis supra prominulis infraque prominentibus ad prominulis. *Flores* axillares, paucifasciculati fasciculisque usque ad 4-floris, unisexuales. *Flores masculini* ca 10 mm longi, breviter pedicellati pedicelloque crasso usque ad 3 mm longo minute stellato-tomentello; bracteolae 3, calycis basi insertae, anguste oblongo-ovatae, usque ad 2.5 mm longae, minute stellato-tomentellae; calyx cupuliformis, apice truncatus et breviter 5-denticulatus, ca 4.5 mm longus et apice 4 mm diam, fusco-punctatus, extus minute stellato-tomentellus, intus glaber; petala 5, tubo obconico farcto ca 2.5 mm longo glabroque, lobis contortis inaequilateralibus obovatis 7.5 mm longis et 4 mm latis

conspicue fusco-punctatis extus praeter partem glabram petalum vicinum tegentem minute stellato-tomentellis intusque glabris; tubus stamineus anguste conicus, farctus, apice breviter 5-lobulatus, usque ad 4 mm longus, glaber, parte dimidia superiore filamenta ferens filamentisque brevissimis et vix 1 mm longis glabrisque, antheris ca 45 1-2 in quoque filamento hippocrepiformibus; pistillum nullum. *Flores foeminei* non visi. *Capsula* calyce persistenti circumcincta, distincte stipitata, late obovoidea, apice emarginata et minute mucronulata, usque ad 1.5 cm longa, coriacea, extus minute fusco-tomentella, in valvis 3 intus glabris loculicida; semina 1-2 in quoque loculo, usque ad 8 mm longa, testa nigro-fusca cum venulis pallidioribus, arillata.

PANAMA. PANAMA: betw Cerro Jefe & "School House," NE of Cerro Azul, forest, thicket at edge of road, *Dressler* 3227 (staminate flowers, holotype MO); betw Cerro Jefe & La Eneida, by rd, 16 Febr 1968, *Dressler* 3383 (capsules, MO).

Only one species of *Hampea* [*H. appendiculata* (J. D. Sm.) Standley] was reported in my revision of the *Bombacaceae* for the Flora of Panama (Ann. Missouri Bot. Gard. 51: 62, 1964). A key which permits separation of the three species now reported from Panama follows:

- a. Leaf blades auriculate-appendaged at the base; flowers 16-18 mm long *H. appendiculata*
- aa. Leaf blades without auriculate appendages at the base; flowers up to 14 mm long.
 - b. Leaf blades very broadly ovate, shallowly cordate to broadly rounded at the base, short-acuminate at the apex, stellate-tomentellous beneath; flowers to 14 mm long; pedicel to 15 mm long; staminal tube densely barbate, indument ochraceous *H. dukei*
 - bb. Leaf blades ovate, rounded to broadly obtuse at the base, acuminate at the apex, stellate-puberulous especially along the veins to glabrescent beneath; flowers to 10 mm long; pedicel to 3 mm long; staminal tube glabrous; indument not ochraceous *H. micrantha*

Quararibea bilobata A. Robyns, sp. nov.—Fig. 2

Arbor 10 m alta, ramulis novellis breviter stellato-ferrugineo-tomentellis sed glabrescentibus. *Folia* alterna, simplicia, breviter petiolata petioloque crasso 0.8-1 cm longo breviter stellato-ferrugineo-tomentello sed glabrescenti, stipulis deltoideis ca 0.3-0.6 mm longis persistentibusque; lamina leviter asymmetrica, elliptica ad subobovata, basi subrotundata vel obtusa acutave, apice obtusa, 12-25 cm longa et 5.5-11 cm lata, tenuiter chartacea, utrinque sordida, supra sparse stellato-puberula glabrescensque, infra stellato-pubescenti, basi conspicue triplinervia, nervatura supra manifesta sed non prominula, costa nervisque secundariis subtus prominentibus, nervulis venulisque subtus reticulum prominulum formantibus. *Flores* solitarii, oppositifolii (?) vel ramis brevibus inserti; pedicellus brevis, usque ad 1 cm longus sed vulgo brevior, breviter stellato-ferrugineo-tomentellus, bracteolis deltoideis ca 1.5 mm longis nigricantibus persistentibusque; alabastra claviformia; calyx campanulatus, longitudinaliter et conspicue nervatus nervisque prominentibus, usque ad 2 cm longus, extus scaber et dense breviterque stellato-ferrugineo-tomentellus, intus dense sericeus, apice 3-lobatus lobisque inaequalibus obtusis usque ad 6 mm longis; petala 5, alba, anguste obovata, apice rotundata, usque ad 4.5-5 cm longa et 1.5 cm lata, membranacea, utrinque praeter basin stellato-tomentella ad stellato-

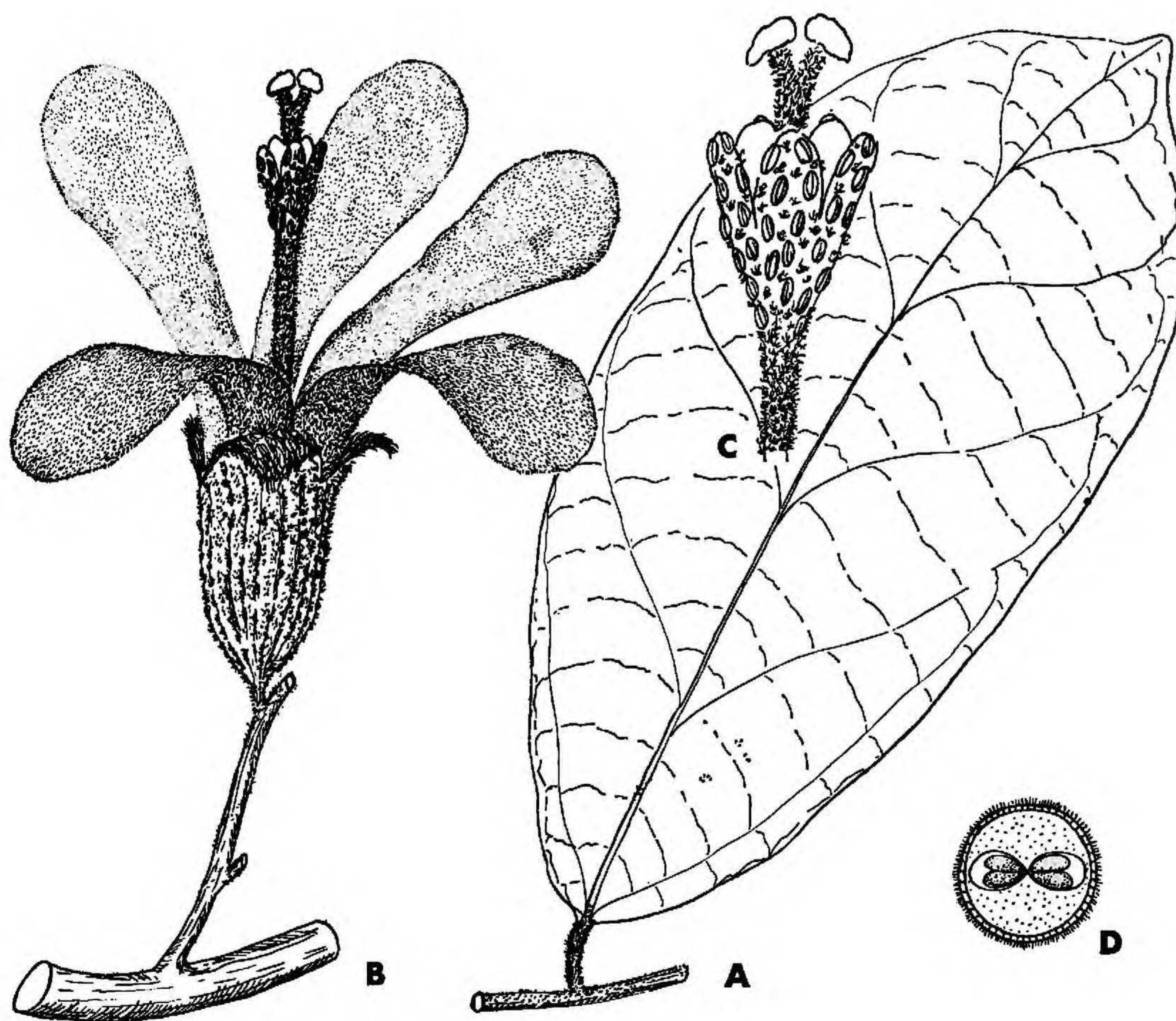


Fig. 2. *Quararibea bilobata* A. Robyns: A, leaf ($\times 1/2$); B, flower ($\times 1$); C, upper part of staminal tube with anthers, and upper part of style with stigmas ($\times 2$); ovary, cross-section ($\times 6$). After Wurdack 2450.

puberula; androecium inclusum, 3-3.7 cm longum, tubo cylindrico apice breviter 5-lobato lobisque rotundatis 2-4 mm longis praeter basin stellato-albido-arachnoideo, antheris sessilibus tubi apice et lobis insertis ca 1.5-2 mm longis; ovarium conicum, adpresse stellato-tomentellum, 2-loculare loculisque 2-ovulatis, stylo androecio longiore 3.5-4.5 cm longo stellato-arachnoideo-tomentello apicem versus dilatato et manifeste bilobato, stigmatibus flabelliformibus usque ad 4.5-5 mm latis. *Fructus* ignotus.

PERU. LORETO: Prov Alto Amazonas, rainforest at upper end of Pongo de Manseriche, Río Marañón, alt 250 m, 26-28 Oct 1962, Wurdack 2450 (holotype UC, isotype US).

Quararibea bilobata is close to *Q. amazonica* Ulbr. (Verh. Bot. Ver. Prov. Brandenburg 50: 91, 1909) from the State of Amazonas in Brazil (type *Ule* 37b, probably destroyed in Berlin; photo Field Museum of Natural History 9552 at MO). These species can be separated as follows:

- a. Young branchlets and petioles shortly stellate-ferruginous-tomentellous; leaf blades sparsely stellate-puberulous to glabrescent above, stellate pubescent beneath; flowers 4.5-5 cm long; bracteoles deltoid, ca 1.5 mm long; calyx densely and shortly stellate-ferruginous-tomentellous outside; staminal column 5-lobate, the lobes 2-4 mm long *Q. bilobata*

- aa. Young branchlets reddish and glabrous; leaves glabrous except for a few stellate hairs along the veins on the lower surface; flowers 3.5-3.7 cm long; bracteoles subulate to lanceolate-subulate; calyx lepidote outside; staminal column dentate at the apex, the teeth 0.75-1 mm long*Q. amazonica*

Quararibea longitubulosa A. Robyns, sp. nov.—Fig. 3.

Arbor 25-35 m alta, ramulis teretibus dense minuteque stellato-puberulis sed glabrescentibus. *Folia* alterna ad subopposita, simplicia, petiolata petioloque tereti 2.5-13 cm longo basi apiceque parum dilatato et dense minuteque stellato-puberulo, stipulis lineari-ovatis acutis obtusisve usque ad 19 mm longis et 4 mm latis stellato-tomentellis mox deciduis; lamina parum asymmetrica, elliptica ad late elliptica, interdum leviter obovata, basi cordata, apice obtusa ad breviter obtuseque acuminata, 10-30 cm longa et 5.5-19 cm lata, chartacea, leviter discolor, praecipue supra subnitida, utrinque sed praecipue secus venas sparse minuteque stellato-puberula, basi 7-9-nervia, nervatura supra prominula, costa nervisque secundariis subtus prominentibus, nervulis venulisque subtus reticulum prominulum formantibus. *Flores* ramiflori et cauliflori, paucifasciculati, pedicello apicem versus



Fig. 3. *Quararibea longitubulosa* A. Robyns: A, leaf ($\times 1/2$); B, inflorescence and flower ($\times 1$); C, detail of a lobe of the staminal column with 2 anthers ($\times 6$); D, ovary, cross-section ($\times 7$). After Wurdack 2102.

sensim dilatato usque ad 2.5 cm longo minute stellato-tomentello, bracteolis prope pedicelli basin insertis caducisque; alabastra claviformia; calyx infundibuliformis, ca 2 cm longus, apice 3-lobatus lobisque inaequalibus rotundatis usque ad 8 mm longis, extus minute stellato-tomentellus, intus dense sericeus; petala 5, alba, anguste obovata, apice asymmetrica, ca 3.5 cm longa et 9 mm lata, membranacea, extus dense stellato-tomentella, intus villosa; androecium longe exsertum, tubo stamineo cylindrico saltem in sicco obtusiuscule 5-subangulato basi leviter dilatato usque ad 5.5 cm longo (lobis exclusis) stellato-tomentello indumentoque interdum apicem versus paucis pilis glandulosis longioribusque intersperso apice in 5 lobos antheriferos producto, lobis linearibus carnosus usque ad 2 cm longis stellato-puberulis et sparse glanduloso-pilosis, antheris ca 12-18 in quoque lobo sessilibus oblongis et ca 2-3 mm longis; ovarium conicum, 5-obtuso-angulatum, stellato-tomentellum, 5-loculare loculisque 2-ovulatis, stylo androecio parum brevius dense stellato-tomentello apice parum dilatato curvato et breviter 5-lobato. *Fructus* ignotus.

PERU. LORETO: Prov Alto Amazonas, high rainforest along Río Marañón nr Teniente Pinglo, just above Pongo de Manseriche, alt 250-300 m, occasional, 4-7 Oct 1962, *Wurdack* 2102 (holotype US, isotypes F, UC).

Quararibea sanblasensis A. Robyns, sp. nov.; ab affini *Q. leptandra* Cuatr. (*Lloydia* 11: 185, 1948) foliorum lamina angustiore basi obtusa ad subrotunda et membranaceo-chartacea, pedicello 6-8 cm longo, bracteolis longe persistentibus primo visu sat recedit.—Fig. 4.

Arbor mediocris et 10-20 m alta, ramulis novellis stellato-puberulis. *Folia* alterna, petiolo robusto tereti usque ad 2.4 cm longo et stellato-puberulo; lamina plus minusve inaequilateralis, anguste oblongo-elliptica ad anguste elliptica subobovata, basi obtusa ad subrotundata, apice plus minusve longe acuminata acumineque minute mucronulato, 12-40 cm longa et 4-11.5 cm lata, membranaceo-chartacea, marginibus integris ad leviter sinuatis, utrinque minute puberula, e basi manifeste 3-5 nervia, costa nervisque secundariis subtus prominulis infraque valde prominentibus, nervis tertiis plus minusve transversis cum venulis in reticulum prominulum anastomosantibus. *Flores* oppositifolii, solitarii, longe pedicellati pedicelloque tereti 6-8 cm longo stellato-puberulo, bracteolis 3 pedicelli apicem versus insertis plus minusve distantibus inaequilateralibus subulato-deltaideis ad anguste deltaideis usque ad 15 mm longis et basi 3.5 mm latis utrinque minute puberulis longe persistentibusque; calyx tubulosus, usque ad 18 mm longus et 8 mm diam, apice 3(-5)-lobatus lobisque inaequalibus usque ad 4 mm longis, in vivo viridis, extus dense minuteque puberulus, intus dense sericeus, accrescens; petala ut androecium nondum visa; ovarium 5-loculare loculisque biovulatis. *Capsula* calyce accrescenti late campanulato et usque ad 2 cm diam circumcincta, drupacea, ovoidea, apice truncato-mamillato et minute apiculato, usque ad 3 cm longa et 1.5 cm diam, in vivo viridis, in sicco fulva, lepidato-stellato-tomentella, fibroso-lignosa, 5-locularis loculisque ut videtur uniseminalibus.

PANAMA. SAN BLAS: headwaters of Río Cuadí, Camp Diablo (Drill Site 22, N 82.2, E 87.8, alt 273.4 ft, seasonal evergreen forest along river, 18 Dec 1967, *Duke, Robyns & Verhoek* 3634 (holotype MO); plain of Sperdi, nr Puerto Obaldía, nr sea level, *Pittier* 4353 (US).

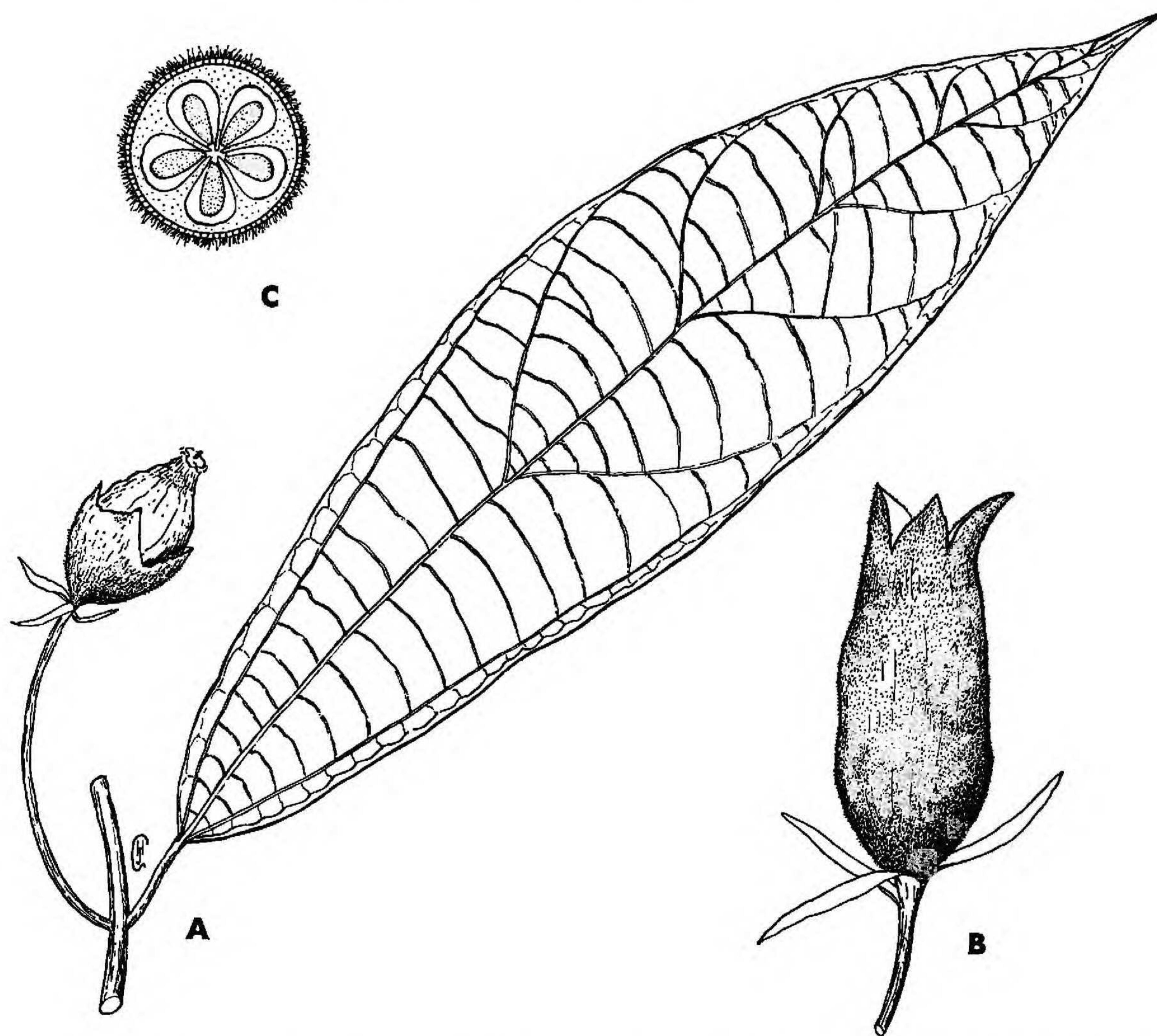


Fig. 4. *Quararibea sanblasensis* A. Robyns: A, leaf and capsule ($\times 1/2$); B, bracteoles and calyx ($\times 2$); C, capsule, cross-section ($\times 1$). After Duke et al. 3634.

Quararibea sanblasensis can readily be distinguished from the other seven species of *Quararibea* occurring in Panama (cf. A. Robyns, Ann. Missouri Bot. Gard. **51**: 54-62, 1964 & **54**: 185-186, 1967) by a combination of the following characters: leaf blades \pm inequilateral, distinctly 3-5-nerved from the base; flowers oppositifolious; pedicels elongated, 6-8 cm long; bracteoles 3, inserted towards the apex of the pedicel, \pm distant, to 15 mm long, persistent; calyx tubular, to 18 mm long and 8 mm in diam, wingless, broadly campanulate and up to 2 cm in diam when surrounding the fruit; ovary 5-locular, each locule 2-ovulate; capsule ovoid, truncate-mamillate and minutely apiculate at the apex, to 3 cm long and 1.5 cm in diam.

Quararibea wurdackii A. Robyns, sp. nov.

Arbor 6-8 m alta, ramulis novellis fusco-stellato-tomentellis sed mox glabrescentibus. *Folia* alterna, simplicia, petiolo tereti apice leviter pulvinato 2.7-5 cm longo praecipue apicem versus fusco-stellato-tomentello, stipulis caducis; lamina anguste elliptica ad elliptica vel subobovata, interdum asymmetrica, basi obtusa ad rotundata, apice acuminata, 17-35 cm longa et 6-14 cm lata, tenuiter chartacea,

subtus glabra, infra secus costae partem inferiorem stellato-puberula, basi conspicue 3(-5)-nervia, costa nervisque secundariis subtus prominentibus, nervulis venulisque subtus reticulum prominulum formantibus. *Flores* axillares, ramis brevibus inserti, longe pedicellati pedicelloque tereti gracili usque ad 7 cm longo minute stellato-puberulo ad stellato-tomentello, bracteolis 3 pedicelli parte superiore insertis lineari-subulatis usque ad 16 mm longis et ca 1 mm latis stellato-tomentellis caducisque; calyx tubuliformi-campanulatus, apice 3-4-lobatus, usque ad 2.3 cm longus, extus minute fusco-stellato-tomentellus, intus sericeus, lobis inaequalibus acutis et usque ad 5 mm longis; petala eburnea, asymmetrica, anguste obovata, apice rotundata, usque ad 3.5 cm longa et 7-8.5 mm lata, membranacea, extus praeter basin stellato-puberula indumentoque parte superiore pilis glandulosis intermixto, intus fere glabra, marginibus glanduloso-ciliolatis; androecium longe exsertum, tubo cylindrico saltem in sicco leviter sigmoideo usque ad 6 mm longo, antheris in quoque lobo 6 biserialis sessilibus oblongis inaequalibus usque ad 3 mm longis; ovarium depresso conicum minute stellato-tomentellum 5-loculare loculisque 2-ovulatis, stylo androecium aequanti vel androecio leviter brevior apice ut videtur obscure 5-lobulato. *Fructus* ignotus.

PERU: LORETO: Prov Alto Amazonas, high rainforest along Río Marañón nr Teniente Pinglo, just above Pongo de Manseriche, alt 250-300 m, 4-7 Oct 1962, *Wurdack* 2129 (holotype US, isotype F).